agri-fax Alberta

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# Varietal Description of Bridge Two-Row Spring Barley

## Origin and breeding

Bridge feed barley, tested as TR544 and TR521S6, was developed at the Agriculture Canada Research Station, in Lethbridge, Alberta. It originated from the cross TR521*6/TR516 completed in 1982. TR521 originated from the cross Zephyr x Hector. The parentage of TR516 is Betzes/Piroline *2//Zephyr. The breeding procedure for Bridge included six backcrosses, and six self-pollinations to transfer the short rachilla hair trait from TR516 into TR521 to develop Bridge. In 1982, 46 progeny rows were grown and harvested, one of which was TR521S6. The selection criteria rows were grown and harvested, one of which was TR521S6. The selection criteria used in developing this variety were yield, short rachilla hairs, maturity, resistance to lodging, kernel weight and test weight. In 1987 seed from one progeny row was used to develop head rows which were seeded at Lethbridge in 1988. Seed from 75 uniform rows were harvested to become the breeder rows. The seed from these rows was bulked to form the Breeder seed of Bridge.

## Varietal characteristics

### Plant characteristics

Coleoptile color: green

Juvenile growth: erect

Leaves: medium green; medium width and length; green leaf sheath; glabrous sheath and blade

Flag leaf: medium green; waxy; medium width and length; intermediate attitude; white auricles; waxy sheath

Stem: grass green; waxy; medium thickness; five nodes on stem; closed collar; straight neck; exserted 3 - 10 cm from flag leaf to spike

Plant height: medium

Heading date: midseason

Tolerance to drought: fair

Resistance to straw breaking: good

Resistance to neck breaking: good

Resistance to shattering: good

Disease reactions: susceptible to loose smut (*Ustilago nuda*), net form of net blotch (*Pyrenophora teres*), and speckled leaf blotch (*Septoria avenae*); moderately susceptible to scald (*Rhynchosporium secalis*) and spot form of net blotch (*Pyrenophora teres*); moderately resistant to common root rot (*Helminthosporium sativum*), stem rust (*Puccinia graminis*) and surface borne smuts (*Ustilago hordei, Ustilago nigra*)

### Spike characteristics

Type: two-row

Shape: strap; lax density; medium length

Attitude: semi-nodding

Lemma: long, rough awns; green awn tip; no hairs on lemma

Glumes: half the length of the lemma; long hair completely covering the glume; rough glume awn equal in length to glume; green awn tip; rounded empty glumes

Stigma hairs: many

Rachis: slightly tapered segments; numerous long hairs; curved internode

### Kernel characteristics

Type: covered

Size: midsize; long in relation to width

Aleurone: yellow

Hull: slightly wrinkled lemma and palea

Rachilla: midlong to long; no abnormal rachillas; short hairs

Lateral veins: green; glabrous

Basal marking: horseshoe depression

Protein content: intermediate

Quality: poor malting quality

### Performance

Bridge is similar in maturity and plant height to Abee with higher test weight and kernel weight than Abee. Bridge consistently outyielded the check varieties in Western Co-operative Two-Row Barley Trials, and the Saskatchewan Regional Variety Testing Trials and average higher yields

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than Abee in the Alberta Cereal and Oilseed Advisory Committee Regional Variety Testing Program Trials. Bridge is suited for production throughout western Canada although its moderate susceptibility to scald and net form of net blotch may limit it to regions where this disease is not a problem.

**Maintenance of breeder seed**
Agriculture Canada Experimental Farm, Indian Head

**Canadian distributor**
SeCan Association

**Recommended by**
Prairie Registration Recommending Committee on Grain

**Table 1. Grain yield (kg/ha) of Bridge and Abee, Western Co-operative Two-Row Barley Test, 1987-89***

| Variety | Black Zone | Black & Grey Zone | Brown Zone | Overall |
|---|---|---|---|---|
| | (14)** | (11) | (20) | (45) |
| Abee | 4680 | 5807 | 4722 | 4974 |
| Bridge | 4827 | 5886 | 4942 | 5137 |
| Bridge (as % Abee) | 103 | 101 | 105 | 103 |

*Locations:
Black Zone - Brandon, Glenlea, Indian Head, Melfort, North Battleford, Portage La Prairie
Black and Grey Zone - Beaverlodge, Calmar, Ft. Vermilion, Lacombe, Provost
Brown Zone - Acme, Elrose, Irricana, Lethbridge, Regina, Saskatoon, Scott, Swift Current, Watrous
** Station Years

**Table 2. Grain yield (kg/ha) of Bridge and check varieties, Western Co-operative Two-Row Barley Test, 1988-89**

| Variety | Black Zone | Black & Grey Zone | Brown Zone | Overall |
|---|---|---|---|---|
| | (12) | (8) | (14) | (34) |
| Harrington | 4339 | 5532 | 4478 | 4677 |
| Abee | 4386 | 5701 | 4605 | 4786 |
| Bridge | 4541 | 5775 | 4825 | 4948 |
| Bridge (as % Harrington) | 105 | 104 | 108 | 106 |
| Bridge (as % Abee) | 104 | 101 | 105 | 103 |

**Table 3. Agronomic and grain characteristics of Bridge and Abee, Western Co-operative Two-Row Barley Test, 1987-89**

| Variety | Heading (days) | Maturity (days) | Plant Height (cm) | Resis. to Lodging (1-9)* | Test Weight (kg/hL) | Kernel Weight (g/1000K) |
|---|---|---|---|---|---|---|
| | (28) | (34) | (44) | (16) | (38) | (37) |
| Abee | 57.3 | 92.4 | 66.4 | 3.7 | 64.0 | 41.1 |
| Bridge | 56.4 | 92.7 | 66.2 | 2.8 | 65.7 | 44.4 |

*1 = no lodging

**Table 4. Disease data for Bridge and check varieties, Western Co-operative Two-Row Barley Test, 1987-1989**

| Variety | Common root rot (%) | | Ustilago smuts (% infected plants) | | | Stem rust |
|---|---|---|---|---|---|---|
| | Sask | Scott | nuda | hordei | nigra | Glen |
| | (3) | (3) | (3) | (3) | (3) | (3) |
| Bridge | 41.3 | 29.0 | 49.3 | 6 | 10 | 36 MR-MS |
| Abee | 45.5* | 24.5* | 43.5* | 11 | 8 | 50 MR-MS |
| Bonanza | 34.6 | 25.3 | — | — | — | — |
| Melvin | 68.7 | 54.3 | — | — | — | — |

| Variety | Net Blotch Inoculations | | | Net Blotch Field Rating | | Scald Inoc. | Scald Field Ratings | | | | Septoria Inoc. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 102 | 858 | 857 | Shel | Char | 837 | Beav | Fove | Edmt | Char | 692 |
| | (3) | (3) | (3) | (3) | (3) | (3) | (2) | (1) | (1) | (2) | (3) |
| Abee | 9.0 | 10.0 | 7.6 | 7.2 | 4.7 | S | 4.0 | 4.0 | 9.0 | 2.2 | S |
| Bridge | 9.3 | 10.0 | 7.0 | 6.4 | 3.8 | S | 2.8 | 1.5 | 6.0 | 2.4 | s |

*Indicates two station years of data

**Note:** Reaction categories for net blotch (*Pyrenophora teres*) and scald (*Rhynchosporium secalis*) inoculations: 10 (VS) – very susceptible; 9(S) – susceptible; 7(MS) – moderately susceptible; 5(MR-MS) – moderately resistant to moderately susceptible; 3(MR) – moderately resistant; 1(R) – resistant. Isolates 102 and 858 produce normal "net-type" symptoms but differ in virulence spectrum and isolate 857 produces "spot-type" symptoms.

Net blotch field ratings averaged from Shellbrook and Saskatoon, Saskatchewan (SHEL), Edmonton (EDMT), Beaverlodge (BEAV) and Fort Vermilion (FOVE) ratings for scald are (1) resistant to (9) susceptible. Charlottetown (CHAR) ratings for net blotch or scald are (0) resistant to (9) susceptible.

**Table 5. Grain yield (kg/ha) of Bridge and Abee, Alberta Cereal and Oilseed Advisory Committee Regional Variety Testing Program, 1989***

| Variety | Irr[1] | Zone 1 | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 6 | Overall |
|---|---|---|---|---|---|---|---|---|
| | (4) | (5) | (2) | (4) | (4) | (6) | (6) | (31) |
| Abee | 6510 | 4860 | 6313 | 4497 | 4695 | 5261 | 3330 | 4880 |
| Bridge | 7755 | 5041 | 6276 | 4838 | 4434 | 4755 | 3196 | 4954 |
| Bridge (as % Abee) | 119 | 104 | 99 | 108 | 94 | 90 | 96 | 102 |

[1]Irr = Irrigated tests in Zones 1 and 2

*Locations:

Irrigation - Brooks, Bow Island, Strathmore, Lethbridge

Zone 1 – Pincher Creek, Warner, Oyen, Lethbridge, Vulcan

Zone 2 – Acme, Drumheller

Zone 3 – Provost, Stettler, St. Paul, Vegreville

Zone 4 – Olds, Lacombe, Ellerslie, Westlock

Zone 5 – Lac La Biche, Breton, Beaverlodge, Dawson Creek, Ft. St. John, Donnelly

Zone 6 – Manning, Keg River, Buffalo Head Prairie, High Level, Ft. Vermilion, Worsley

**Table 6. Grain yield (kg/ha) of Bridge and check varieties, Saskatchewan Regional Variety Testing Program, 1989***

| | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|
| | (6) | (6) | (6) | (4) |
| Bridge (as % Harrington) | 110 | 110 | 103 | 104 |
| Bridge (as % Abee) | 108 | 114 | 107 | 107 |

*Locations: Assiniboia, Frobisher, Jedburg, Kelvington, North Battleford, Wynyard, Saskatoon, Shellbrook, Wakaw, Swift Current, Steward Valley, Melfort, Somme, Meath Park, Scott, Loon Lake, Glaslyn, Indian Head, Regina, Beverley and Ituna.

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